AMENDMENT(S) TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims on the application. Claims being amended are set forth in a larger font than all other claims. All claims are set forth below with one of the following annotations.

- (Original): Claim filed with the application following the specification.
- (Currently amended): Claim being amended in the current amendment paper.
- (Cancelled): Claim cancelled or deleted from the application.
- (Withdrawn): Claim still in the application, but in a non-elected status.
- (New): Claim being added in the current amendment paper.
- (Previously presented): Claim not being currently amended, but which was amended or was new in a previous amendment paper.
- (Not entered): Claim presented in a previous amendment, but not entered or whose entry status unknown. No claim text is shown.

1. (Currently amended) An apparatus for imaging a flexo sleeve comprising:

a flexo sleeve mounted on a rotatable drum, the drum and sleeve combination having a seam at a seam location;

a laser output scanner oriented to direct one or more imaging laser beams to the surface of the flexo sleeve at one or more corresponding focal spots, the laser output scanner including for each laser beam:

a laser beam source, and

a modulator to modulate the laser beam of the laser beam source according to image data;

a fast scan motion actuator to rotate the drum relative to the one or more laser beams;

a slow scan motion actuator to provide relative motion between the focal points of the one or more laser ~~beam focal points~~ beams and the sleeve surface in a slow scan direction parallel to the axis of rotation of the drum; and

a controller receiving the image data and coupled to each modulator, the fast scan motion actuator, and the slow scan motion actuator,

wherein the controller couples image data to each modulator and compensates for artifacts at the seam while exposing the flexo sleeve at a speed substantially the same as conventional spiral advance imaging with no seam compensation.

2. (Original) An apparatus as recited in claim 1, wherein the image data is screened using a screen that diminishes the visibility of artifacts at the seam location.

3. (Original) An apparatus as recited in claim 2, wherein the screen avoids dot positioning at the seam location.

4. (Original) An apparatus as recited in claim 2, wherein the screen includes pixel displacements in the slow scan direction, the pixel displacement dependent on the distance in the fast scan direction from a starting position, such that imaging using the pixel-displaced screen with spiral advance substantially corrects seam artifacts.

5. (Original) An apparatus as recited in claim 4, wherein the screen displacement is precalculated during raster image processing to prepare the image data.

6. (Currently amended) An apparatus as recited in claim 4, wherein the image data is screened, and wherein the controller causes ~~the deflector~~ a deflector coupled to the controller to perform the screen displacement on the fly.

7. (Original) An apparatus as recited in claim 1, wherein the laser output scanner includes for each beam a deflector for deflecting the laser beam, the deflector coupled to the controller, and wherein the controller causes each deflector to deflect the focus spot of its beam in the slow scan direction while the focus spot moves in fast scan direction.

8. (Original) An apparatus as recited in claim 7, wherein each deflector deflects its focus spot at a speed substantially equal to the speed of advance in the slow scan direction, and in a direction opposite the motion in the slow scan direction.

9. (Original) An apparatus as recited in claim 8, wherein the controller further causes the deflectors to deflect the laser beams to the next set of laser beam positions at the end of each revolution of the drum in the fast scan direction, and wherein the controller then commences imaging at the next set of laser beam positions.

10. (Original) An apparatus as recited in claim 9, wherein the deflection of the beams from one set of beam positions to the next set of beam positions at the end of each revolution to write a next set of tracks occurs while the drum rotates at least one pixel length in the fast scan direction, wherein the controller further cyclically shifts the imaging data for the next set of tracks by an amount corresponding to the drum rotation that occurs during the deflection in the slow scan direction, such that the imaging data is correctly written onto the next set of tracks.

11. (Original) An apparatus as recited in claim 7, wherein the deflector includes an acousto-optical device.

12. (Original) An apparatus as recited in claim 7, wherein the deflector includes a piezo-electric mirror.

13. (Original) An apparatus as recited in claim 11, wherein the modulator uses the same acousto-optical device as the deflector.

14. (Original) An apparatus as recited in claim 7, wherein the image data is screened using a screen, and wherein the controller causes each of the deflectors to displace the pixels of the screen in the slow scan direction by an amount dependent on the fast scan distance such that imaging with a spiral advance substantially corrects the screens for spiral advance to diminish the visibility of artifacts at the seam.

15. (Original) An apparatus as recited in claim 14, wherein the screen is a screen designed to avoid placing dots at the seam.

16. (Original) An apparatus as recited in claim 1, wherein the controller controls a complete rotation of the drum while suppressing motion in the slow scan direction, the rotation causing the one or more beams to write a first set of one or more tracks according to the image data at a set of track locations, wherein the controller further causes the beams to advance in the slow scan direction to the next set of track positions while imaging is suppressed, the controller further commencing imaging at said next set of tracks when the advance in the slow track direction is complete, the controller further cyclically shifting the imaging data for the next set of tracks by an amount corresponding to the drum rotation that occurs during the advance in the slow scan direction, such that the imaging data is correctly written onto the next set of tracks.

17. (Original) An apparatus for imaging a flexo sleeve comprising:

a flexo sleeve mounted on a rotatable drum, the drum and sleeve combination having a seam at a seam location;

an laser output scanner oriented to direct one or more imaging laser beams to the surface of the flexo sleeve at one or more corresponding focal spots, the laser output scanner including, for each beam:

a laser beam source,

a deflector to deflect the beam, and

a modulator to modulate the laser beam according to image data;

a fast scan motion actuator to rotate the drum relative to each laser beam;

a slow scan motion actuator to provide relative motion between each laser beam focal point and the sleeve surface in a slow scan direction parallel to the axis of rotation of the drum; and

a controller receiving the image data and coupled to each modulator, the fast scan motion actuator, each deflector, and the slow scan motion actuator,

wherein the controller couples image data to the modulator and causes each of the deflectors to deflect its focus spot in the slow scan direction while the focus spot moves in fast scan direction.

18. (Currently amended) An apparatus as recited in ~~claim deflect~~ claim 17, wherein each deflector deflects its focus spot at a speed substantially equal to the speed of advance in the slow scan direction, and in a direction opposite the motion in the slow scan direction to compensate for the spiral advance of relative rotation by the fast scan motion actuator combined with the relative motion caused by the slow scan motion actuator in the slow scan direction.

19. (Currently amended) An apparatus as recited in ~~claim deflect~~ claim 17, wherein each deflector includes an acousto-optical device.

20. (Currently amended) An apparatus as recited in ~~claim deflect~~ claim 17, wherein the deflector includes a piezo-electric mirror.

21. (Currently amended) An apparatus as recited in ~~claim deflect~~ claim 17, wherein the image data is screened using a screen, and wherein the controller causes each deflector to displace the pixels of the screen in the slow scan direction by an amount dependent on the fast scan distance such that imaging with a spiral advance substantially corrects the screens for spiral advance to diminish the visibility of artifacts at the seam.

22. (Original) An apparatus as recited in claim 21, wherein the screen is a screen designed to avoid placing dots at the seam.

23. (Original) An apparatus for imaging a flexo sleeve comprising:

a flexo sleeve mounted on a rotatable drum, the drum and sleeve combination having a seam at a seam location;

a laser output scanner oriented to direct at least one or more imaging laser beams to the surface of the flexo sleeve at one or more focal spots, the laser output scanner including for each laser beam:

a laser beam source, and

a modulator to modulate the laser beam according to image data;

a fast scan motion actuator to rotate the drum relative to the one or more laser beams;

a slow scan motion actuator to provide relative motion between each laser beam's focal point and the sleeve surface in a slow scan direction parallel to the axis of rotation of the drum; and

a controller receiving the image data and coupled to the modulator, the fast scan motion actuator, and the slow scan motion actuator,

wherein the controller couples image data to the modulator, controls a complete rotation of the drum while suppressing motion in the slow scan direction, the rotation causing the one or more beams to write one or more tracks according to the image data, the controller further causes the beams to advance in the slow scan direction to the next set of track positions while imaging is suppressed, the controller further

commencing imaging at said next set of tracks when the advance in the slow track direction is complete, the controller further cyclically shifting the imaging data for the next set of tracks by an amount corresponding to the drum rotation that occurs during the advance in the slow scan direction, such that the imaging data is correctly written onto the next set of tracks.

24. (Original) A method of seamlessly exposing a digital flexo sleeve, comprising the steps of:

loading a digital flexo sleeve having a sleeve surface in a laser imagesetter device;

exposing one or more image tracks on the digital flexo sleeve with one or more laser beams moving in a fast scan direction and modulated according to image data;

advancing the laser beams in a slow scan direction; and

compensating for any spiral advance such that artifacts at any seam locations at the sleeve are substantially diminished.

25. (Original) A method as recited in claim 24, wherein the exposing and advancing the laser beams in a slow scan direction occur simultaneously, and wherein the compensating includes simultaneously deflecting the laser beams in the slow scan direction in a direction opposite the slow scan advance direction by an amount dependent on the distance in the fast scan direction from a starting poition, while the laser beams move in the fast scan direction on the sleeve surface, such that the spiral advance is compensated.

26. (Original) A method as recited in claim 24, wherein the image data is screened using a screen, wherein the exposing and advancing the laser beams in a slow scan direction occur simultaneously, and wherein the compensating includes shifting pixel data in the screened image data in the slow scan direction opposite to the slow scan advance direction to compensate for the spiral advance.

27. (Original) A method as recited in claim 26, wherein the shifting is stochastic.

28. (Original) A method as recited in claim 26, wherein the shifting pixel data for a plurality of pixels includes:

RIPping an image using a plurality of specially designed halftone screens, wherein each one of the plurality of the halftone screens use a stochastic pixel shift in a negative slow scan direction.

29. (Original) A method as recited in claim 24, wherein the fast scan motion is rotation of the sleeve relative to the one or more laser beams, and wherein compensation includes:

suppressing motion in the slow scan direction during exposing, the exposing including rotation in the fast scan direction causing the one or more tracks to

be written on the sleeve according to the image data in a first set of track positions,

advancing the one or more beams to advance in the slow scan direction to the start of a next set of tracks at a next set of track positions while suppressing imaging,

commencing imaging at the start of the next set of tracks when the advance in the slow scan direction is complete, cyclically shifting the imaging data for the next set of tracks by an amount corresponding to the sleeve rotation that occurs during the advance in the slow scan direction, such that the imaging data is correctly written onto the next set of tracks.

30. (Currently amended) A method of seamlessly exposing a digital flexo sleeve, comprising the steps of:

loading a digital flexo sleeve in an laser imagesetter device;

exposing one or more image tracks on the digital flexo sleeve with one or more laser beams moving in a fast scan direction and modulated according to image data, the moving in the fast scan direction being by rotation of the sleeve relative to the beams while simultaneously advancing the laser beams in a slow scan direction; and

simultaneously deflecting the laser beams in the slow scan direction in a direction opposite the slow scan advance direction by an amount dependent on the fast scan distance, while the laser beams move in the fast scan direction on the sleeve surface, such that the spiral advance of the advance in the slow scan direction and simultaneous rotational moving in the fast scan direction is compensated.

31. (Original) A method as recited in claim 30, wherein the wherein the motion in the fast scan direction is caused by rotation of the flexo sleeve.

32. (Original) A method as recited in claim 31, wherein the exposing starts when the sleeve is at a starting position, the method further comprising:

resetting the deflection of the one or more laser beams to zero when the sleeve has returned to the starting position.

33. (Original) A method as recited in claim 32, wherein the deflection of the one or more laser beams is carried out by applying frequency chirps to one or more acousto-optical device.

34. (Original) A method as recited in claim 30, wherein the deflection of the one or more laser beams is carried out by one or more piezo-electric mirrors.

35. (Original) A method of seamlessly exposing a digital flexo sleeve, the method comprising the steps of:

loading a digital flexo sleeve in a laser imagesetter device;

exposing a first image track on the digital flexo sleeve with a laser beam modulated according to image data;

interrupting the laser beam;

advancing the laser beam to a second image track in a block advance in a slow scan direction, wherein the block advance requires less than a full revolution of the flexo sleeve; and

starting an exposure of the second image track immediately upon completion of the block advance.

36. (Original) A method as recited in claim 35, wherein starting the exposure of the second image track includes cyclically shifting the second image track image data so that data of the second image track is written at a correct position on the digital flexo sleeve.

37. (Original) A method as recited in claim 35, wherein multiple image tracks are imaged simultaneously.

38. (Original) A method of seamlessly exposing a digital flexo sleeve with a halftone image, the method comprising the steps of:

displacing pixel data for a plurality of pixels, wherein the plurality of pixels are located adjacent to a seam on a digital flexo sleeve;

loading the digital flexo sleeve in an imagesetter device; and

transferring the halftone image to the digital flexo sleeve.

39. (Original) A method of seamlessly exposing a flexo sleeve having a seam location, the method including the steps of:

raster image processing (RIPing) an image using specially designed halftone screens, so that no halftone screening dots are placed directly at the seam location;

loading a digital flexo sleeve in an imagesetter device; and

transferring an image to the flexo sleeve using a conventional spiral advance mode.

40. (Currently amended) A method of seamlessly exposing a flexo sleeve having a seam location, the exposing using an imagesetter that uses conventional spiral advance imaging including a slow scan direction, the method including the steps of:

RIPping an image using specially designed halftone screens;

introducing pixel shift in the negative of the slow scan direction into the screen to compensate for the spiral advance of an imagesetter that uses conventional spiral advance imaging;

loading a digital flexo sleeve; and

exposing the image onto the flexo sleeve loaded on the imagesetter device using the conventional spiral advance imaging mode.

41. (Original) A method as recited in claim 40, wherein the shift is introduced in the RIPping step.

42. (Previously Presented) A method as recited in claim 40, wherein the shift is introduced by on the fly displacement during imaging.